



Agricultural Nitrogen & CDFA, Fertilizer Research and Education Program

July 23, 2013 | State Water Board

Asif Maan, Ph.D., Environmental Program Manager

Topic

Managing Agricultural Nitrogen

Outline

- CDFA- Fertilizer Research and Education Program (FREP) Initiatives – Asif Maan
- Nitrogen Management Curriculum Development and Training – Dr. Doug Parker
- Certified Crop Advisors Program – Mike Huffman

Managing Agricultural Nitrogen: Complexity



FREP Initiatives

1. Accessibility of FREP Research

- Online searchable database
- Decision making tool

2. Focused Research

- Special RFP – “Pump and Fertilize”

3. Technical Education & Outreach

- Precision irrigation and fertigation
- Nitrogen Management Training Program

1. Accessibility of FREP Research: *Online Searchable Database*

The New Way

- RESEARCH
- Competitive Grant Program
 - Grant Process
 - Ongoing Research Projects
 - Completed Research Projects
 - Information for FREP Researchers

- TECHNICAL EDUCATION
- FREP Research Database - search over 20 years worth of research projects**
 - Crop Fertilization Guidelines
 - Nitrogen Management Training Program
 - Nutrient Management Tools

- OUTREACH
- Annual Conference
 - Conference Proceedings
 - Managing Agricultural Nitrogen Technical Forums

Database allows users to search by:

- *Keyword(s)*
- *Type of Crop*
- *County*
- *Date Range*

- MORE RESOURCES
- American Society of Agronomy - California Chapter (Cal-ASA)
 - Association of American Plant Food Control Officials (AAPFCO)
 - California Certified Crop Adviser

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE
INSPECTION SERVICES DIVISION

CDFA Home | Inspection Home | Programs | Apply/Register | Laws & Regs | Meetings | Contact Us

Chem Lab | Feed, Fertilizer, L/S Drugs | Inspection & Compliance

20 years OF FREP RESEARCH

CDFA Home > Inspection Services > FREP Database

FREP DATABASE

The Fertilizer Research and Education Program (FREP) funds and coordinates research to advance the environmentally safe and agronomically sound use and handling of fertilizer materials. Since 1990, FREP has funded research on many of California's important and environmentally sensitive cropping systems. This database aims to make the wealth of information contained in FREP research projects readily available, easily understandable, and convenient for growers to implement.

Please enter search criteria:

Keyword(s)

Type of Crop

County

Date Range

<http://www.cdfa.ca.gov/is/frep/Default.aspx>

1. Accessibility of FREP Research: *Online Searchable Database*

FREP DATABASE

Search results:

Study Title	County	Crop Type
Demonstration of Pre-Sidedress Soil Nitrate Testing as an N Management Tool	Monterey	Lettuce
Demonstration Program for Reducing Nitrate Leaching through Improvements to Irrigation Efficiency and Fertilizer/Cover Crop Management	Monterey	Lettuce
Determination of Best Nitrogen Management Practices for Broccoli Production in the San Joaquin Valley	Fresno	Broccoli
Development and Demonstration of Nitrogen Best Management Practices (BMP's) for Sweet Corn in the Low Desert	Riverside	Sweet Corn
Development and Promotion of Nitrogen Quick Tests for Determining Nitrogen Fertilizer Needs of Vegetables and Survey of Soil Residual Nitrate-Nitrogen Levels	San Benito, Monterey	Cabbage, Onion, Lettuce
Development of a Model System for Testing Foliar Fertilizers, Adjuvants and Growth Stimulants	Site independent	Arabidopsis used as model plant
Development of a Nitrogen Fertilizer Recommendation Model to Improve N-Use Efficiency and Alleviate Nitrate Pollution to	Yolo, Colusa	Almond

1. Accessibility of FREP Research: *Online Searchable Database*



[CDFA Home](#) > [Inspection Services](#) > [FREP Database](#)

STUDY RECORD

Demonstration of Pre-Sidedress Soil Nitrate Testing as an N Management Tool

Hartz, T.K., Department of Vegetable Crops, University of California, Davis

Project Highlights

- Sidedressing to lettuce can be delayed as long as residual soil $\text{NO}_3\text{-N}$ in the top foot of soil exceeds 20 ppm.
- Maximum yields can be achieved in fields with lower soil $\text{NO}_3\text{-N}$ levels by sidedressing only enough to raise soil $\text{NO}_3\text{-N}$ concentration to 20 ppm.
- Nitrate-N levels can be raised to this threshold by applying 80 to 100 lbs N/acre minus 4 lbs N/acre per ppm of soil $\text{NO}_3\text{-N}$.

Crop

Lettuce

County

Monterey

Years of Study

1996 - 1999

10



Fertilization Guidelines for Major Crops Grown in California

These guidelines are based on research results from studies carried out in California and elsewhere. For an optimal fertilization program, site-specific information on soil type, climate and crop management need also to be taken into account.

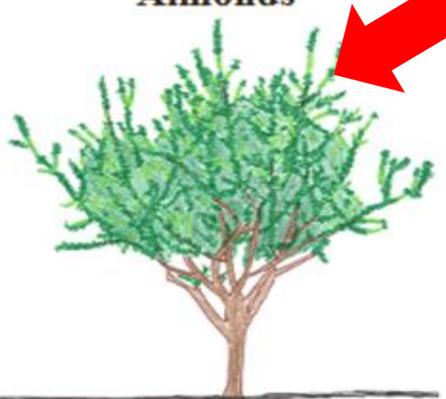
After choosing a crop from the list below, detailed information can be accessed by moving the mouse over any shape with the symbol ⓘ.

Cotton

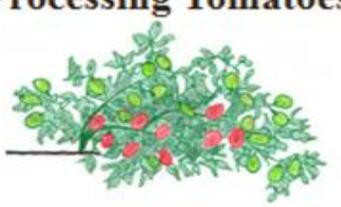


Under Review!

Almonds



Processing Tomatoes



Soil and Plant Tissue Sampling

- [Soil Test Sampling Instructions](#)
- [Sampling for Soil Nitrate Determination](#)
- [Soil Sampling in Orchards](#)
- [Plant Tissue Sampling](#)

Broccoli



Lettuce



Corn

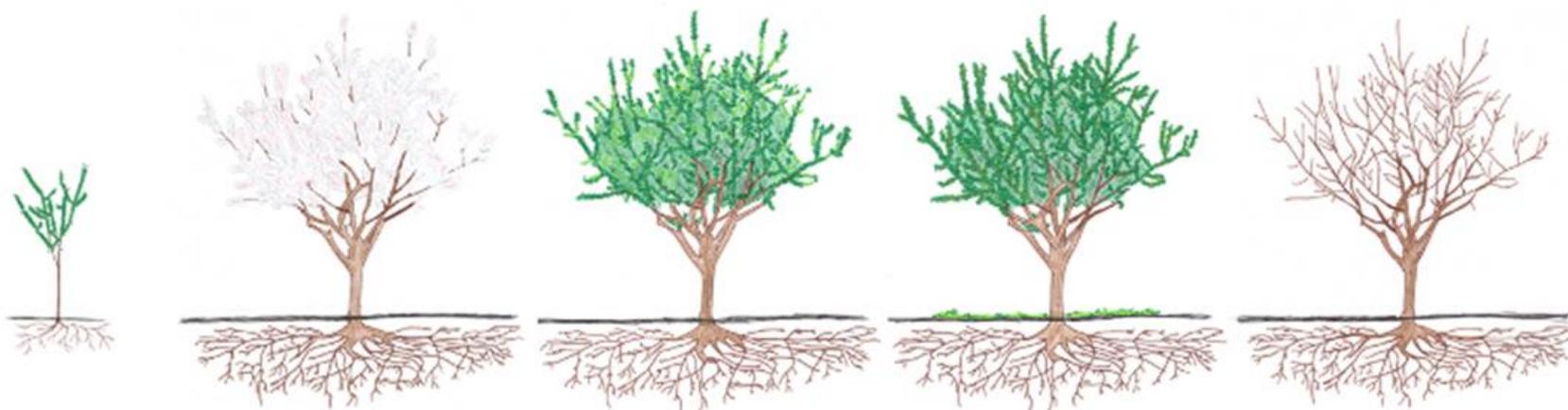


Rice



Almond Fertilization Guidelines

Funding provided by:



Young Trees

Bloom
Spring

Fruit Development
Summer

Post-Harvest
Fall

Dormancy
Winter

Nitrogen (N) ⓘ

N ⓘ

Foliar N ⓘ

Soil applied N ⓘ

Foliar N ⓘ

Leaf analysis ⓘ

Phosphorus (P₂O₅) ⓘ

Soil Test ⓘ

P ⓘ

Foliar P ⓘ

Leaf analysis ⓘ

Soil Test ⓘ

Soil applied P ⓘ

Potassium (K₂O) ⓘ

Soil Test ⓘ

K ⓘ

Foliar K ⓘ

Leaf analysis ⓘ

Soil Test ⓘ

Soil applied K ⓘ

Acknowledgments ⓘ

Additional Information:

1. Almond Production in California (Historic Background, Production Statistics)
2. FREP Database

Links:

1. University of California – Fruit & Nut Research and Information Center
2. University of California – The Almond Doctor
3. University of California – Nutrient Management for Vegetable, Fruit &

2) Focused Research: 2012 Special RFP

Special RFP: “Pump and Fertilize” proof of concept

- Six project proposals
- FREP-TASC and peer reviews
- Two proposals have been selected for funding of over \$700,000
- Three years field level research in Tulare Lake Basin and Salinas Valley
- Both proposals are from UC

3) Technical Education: *Precision Irrigation and Fertigation*

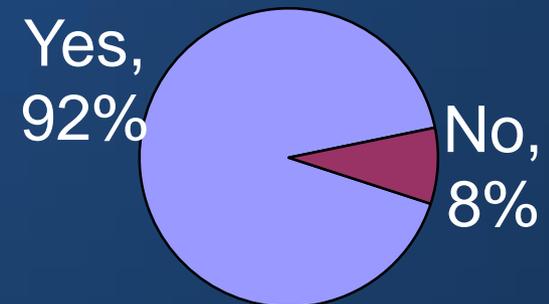
- Collaboration with Center for Irrigation Technology, CSU Fresno
- Minimizing groundwater nitrate loading by proper irrigation and fertigation
 - right equipment, right amount, and uniform distribution
 - how much, how long, and how often
- Presentation and demonstration



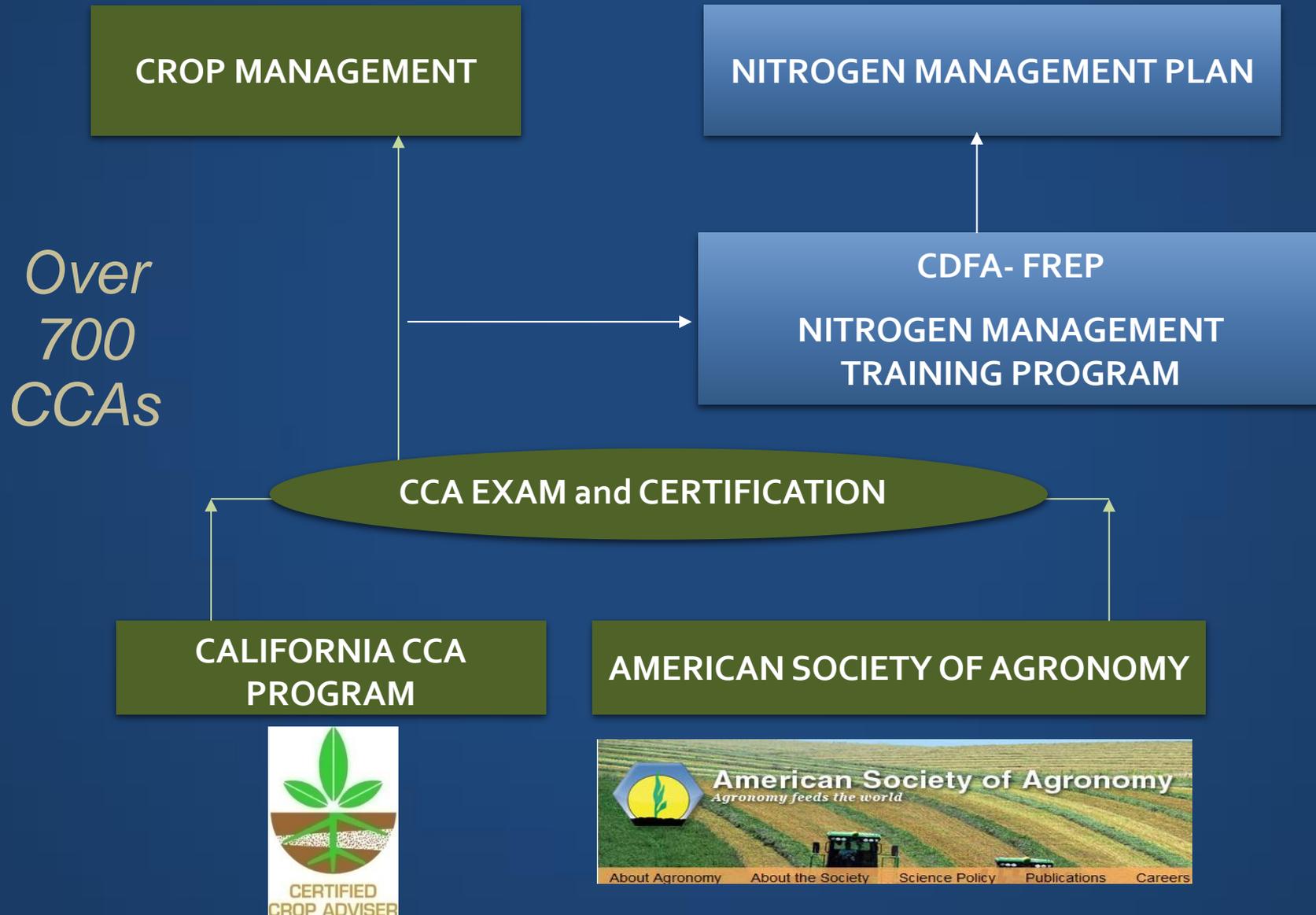
3) Technical Education: *NMT for CCAs*

The Need and Demand

- Enhance economic and environmental benefits through improved management of agricultural use of nitrogen and irrigation water
- Regional water boards requirement - growers to implement nitrogen management plans
- Need professionals to assist growers with nitrogen management plans
- Grower survey at ESJWQC meeting



3) Technical Education: *NMT* for CCAs



Curriculum Development and Training in Nitrogen Management

Doug Parker Ph.D.

Director, California Institute for Water Resources
Strategic Initiative Leader, UC ANR Water Initiative
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University of California

Agriculture and Natural Resources

California Institute for Water Resources

Purpose of the Program

- Enhance economic and environmental benefits through improved management of agricultural use of nitrogen and irrigation water.



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Agriculture and Natural Resources

California Institute for Water Resources

Initial Target Audience

- California Certified Crop Advisors (CCAs)
- Regional Trainings
 - 4 in Central Valley
 - 1 in Salinas Valley



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Program

- 2-Day Program
 - Day 1: General Session
 - Day 2: Concurrent Sessions (May Repeat Morning and Afternoon)
 - Annual Crops
 - Permanent Crops



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Curriculum Outline: Day 1: General Session

- 1) Objectives of the course
- 2) Nitrogen Cycle in Crop Production Systems
- 3) Nitrogen Sources
- 4) Irrigation and Nitrogen Management
- 5) Nitrogen Budgeting
- 6) Future Resources



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Curriculum Outline: Day 2: Annual and Permanent Crops Sessions

Concurrent Sessions:

- A) Current Practices
- B) The Use of BMPs
- C) Nitrogen Management Planning Exercise



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Timeline

- October 2012
 - Initial discussion UC and CDFA
- November 2012 – March 2013
 - Create Steering Committee
 - Set program goals
 - Draft curriculum outline
 - Draft list of potential team members
- April – May 2013
 - Form Curriculum Development Teams
 - 50+ Potential Individuals Identified
 - UC, CSU, USDA, Private Sector, Coalition Groups



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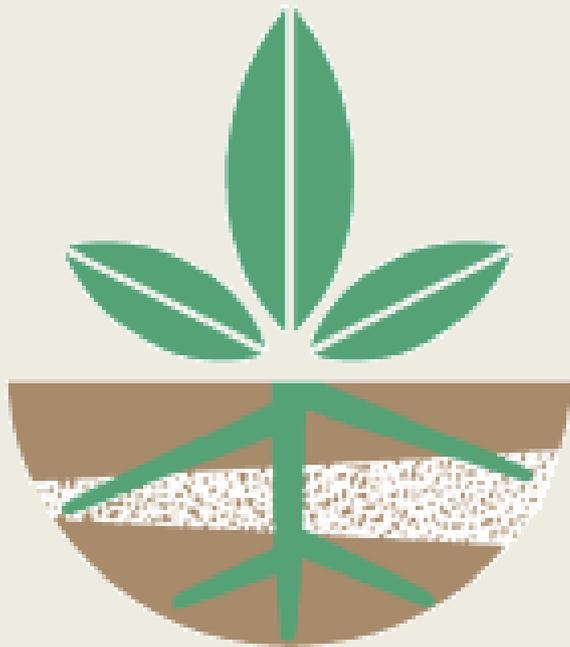
California Institute for Water Resources

Timeline

- May – October 2013
 - Create Draft Curriculum
 - PowerPoints with Notes
 - Reference materials
- November – December 2013
 - Edit and Finalize Curriculum
- January – March 2014
 - Provide Trainings
- Beyond March 2014
 - Video of Trainings
 - Publications
 - Assess Additional Needs



CALIFORNIA CERTIFIED CROP ADVISORS



Mike Huffman
Vice Chairman
July 23, 2013

CERTIFIED
CROP ADVISER

CALIFORNIA CCA PROGRAM

- Voluntary Crop Advisor Certification Program
- Established 1992
- Certification Standards established by ICCA of the American Society of Agronomy
- CCA Requirements Pass International & CA exam requirements, minimum of two years of consulting experience, 2 letters of recommendation from growers and 40 hours of CEUs every two years to maintain certification standards
- CA CCA Board oversees programs



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Current Number of CCAs in California

- Current – 719
- Candidates taking August exam– 157 total
- Exam given twice a year – February & August
- About 80% of California CCA are PCAs



[Find a CCA/CPAg](https://portal.sciencesocieties.org/BuyersGuide/ProfessionalSearch.aspx?Token=)

<https://portal.sciencesocieties.org/BuyersGuide/ProfessionalSearch.aspx?Token=>

California CCA Expertise

- Nutrient Management
- Soil & Water Management
- Diversified Crop Consulting/Management
- Dairy Manure Management
- Pest Management (must be a PCA to make pest management recommendations)
- Regulatory Requirements for Crop Protection



CCAs and Growers

- Most CCAs work for or with growers
- Soil, Water, Tissue Testing
- Provide cropping advice, nutrient recommendations based on tests, crop needs
- Usually long standing relationship with growers
- Independent consultants, input sales personnel, agency employees



CALIFORNIA CCA Educational Project Recognition

- The CDFA FREP has been a long time funding supporter of the California CCA Program.
- August 1, 2007 – December 31, 2008
- January 1, 2009 – December 31, 2011
- January 1, 2012 – December 31, 2014

Thanks for Your Support



Communications

Become a FAN of California Certified
Crop Advisers



CA Certified Crop Advisors

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Thank You

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